Date: \_\_\_\_\_\_\_\_\_\_\_

NOTES: Magnetism From Electric Currents

Chapter \_\_\_\_\_, Section \_\_\_\_\_, pages \_\_\_\_\_ - \_\_\_\_\_

**I. The Discovery**

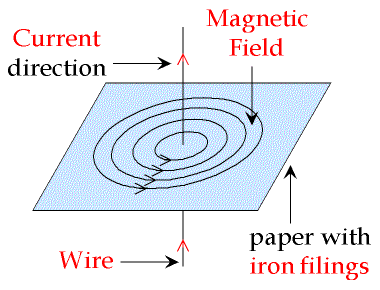
A. In the year \_\_\_\_\_\_\_\_\_, the Danish physicist \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ observed that:

B. When Oersted reversed the current direction in the conductor the compass needle…

C. From these observations, Oersted concluded that:

1.

2.

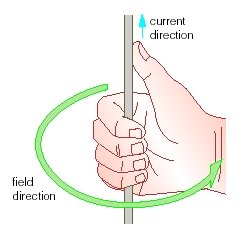
**II. Electromagnetism**

A. The magnetic field around a current-carrying wire

forms a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ around the conductor.

B. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is used to find the

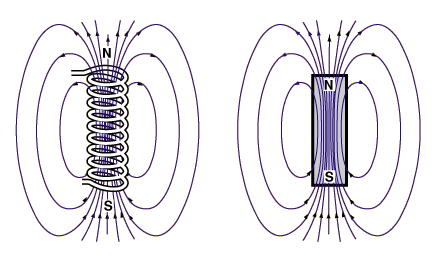
direction of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ produced by a current.



* *THUMB* - points in the direction of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* FINGERTIPS - point in the direction of the

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

C. Solenoids

* a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a \_\_\_\_\_\_\_\_\_\_ of wire with an electric current in it.
* it acts as a \_\_\_\_\_\_\_\_\_\_\_\_\_ when current passes through it (has a

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of each loop \_\_\_\_\_\_\_\_\_ to the strength of the magnetic field of any neighboring loops.
* If the current changes direction, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

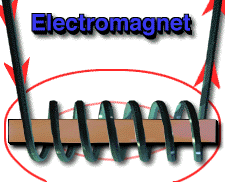
changes direction and the \_\_\_\_\_\_\_\_\_ flip. (use a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to test)

* *To* ***INCREASE*** *a solenoid’s magnetic field:*

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



\* This makes an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

D. ELECTROMAGNETS

* Much \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than solenoids themselves

because the magnetic field of the \_\_\_\_\_\_\_\_\_\_\_ causes the ferromagnetic core to

become a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the core line up and

create a larger magnetic field.

* Electromagnets may be turned \_\_\_\_\_\_\_\_\_\_ depending on if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is flowing.

**III. ELECTROMAGNETIC DEVICES**

A. Galvonameter/Ammeter –

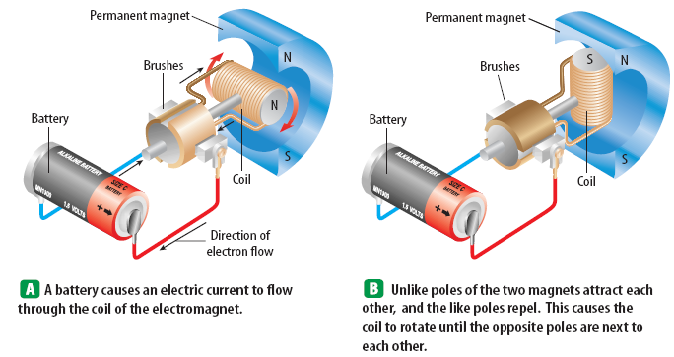
* Have an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (attached to a pivoting needle) that

interacts with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ magnet to measure

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* The stronger the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ through the coils, the greater

the attraction/repulsion with the permanent magnet.



B. E \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ M \_\_\_\_\_\_\_\_\_\_\_\_\_

- converts (changes) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy into\_\_\_\_\_\_\_\_\_\_\_\_\_ energy (motion)

\*Using the picture to the left (and your own words), explain how to motor spins:

1.

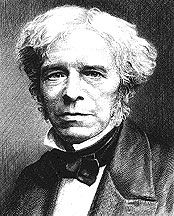
2.

3.

4.

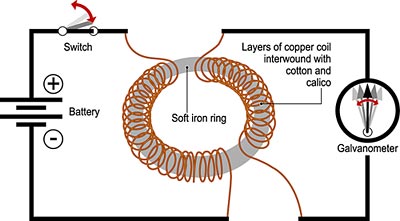
5.

Date: \_\_\_\_\_\_\_\_\_\_\_

**NOTES: Creating Electricity from Magnetism**

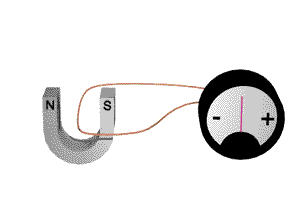
Chapter \_\_\_\_\_\_\_\_, Section \_\_\_\_\_\_\_\_, pages \_\_\_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_

**I. The Discovery**



A. In the year \_\_\_\_\_\_\_\_, the English scientist \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ discovered that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be produced from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. How? *What did he do*?

**II. Electromagnetic Induction**

A. = The process through which electric \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is produced by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ magnetic field.

1. How to produce a changing magnetic field?
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Current is created only if wire **cuts across** the magnetic field.
* The **direction of the current** depends on the direction of the movement of the magnetic field (or wire through the magnetic field)

**III. Electric Generators**

* convert \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy
* To produce electricity...(what has to happen?):

From the video clip “Generating Electricity”, clearly explain how electricity was created in outer space.

**List** and **describe** at least 3 alternative methods of electricity generation (besides burning coal):